

DIABETES AND PREGNANCY IN IDAHO

**Demographic Differences in Risk, Birth
Outcomes, and Prenatal Care**

1999-2003

**Idaho Department of Health and Welfare,
Bureau of Health Policy and Vital Statistics
June 2005**

INTRODUCTION

Purpose:

The purpose of this report is to highlight the differences in risk, prenatal care and birth outcomes for women with diabetes during pregnancy across different demographic populations in Idaho.

Methods:

Vital Statistics Data:

Data are based on 103,628 live births to Idaho residents, occurring in Idaho as well as other states, for the five year period from 1999-2003. Maternal characteristics include age at delivery, self-reported race/ethnicity, the month that prenatal care was initiated, the number of prenatal care visits, the method of delivery, and diabetes as a medical risk for the pregnancy. Information on birth weight and the presence of congenital anomalies is also provided.

Maternal diabetes is reported from the hospital or physician record on a check box on the birth certificate; however, the type of diabetes (pre-existing or gestational) is not recorded (see technical notes). Therefore data may include cases of type 1 diabetes known at the time of conception, previously undiagnosed type 2 diabetes diagnosed during pregnancy, type 2 diabetes known at the time of conception, or gestational diabetes diagnosed during pregnancy. Diabetes rates are based on the live births with known maternal medical risk factors. A total of 103,230 live birth records out of 103,628 live birth records had known data for medical risk factors.

Birth certificate data may underestimate the true prevalence of maternal diabetes in pregnancy. Estimates of diabetes prevalence in pregnancy among different groups are confounded by differences in screening protocols and diagnostic criteria. Prevalence underestimation may be greater in populations that are less likely to receive diabetes screening because of younger maternal age and/or late or no prenatal care. Selective screening based on maternal age does not detect a substantial number of diabetes cases in younger mothers. Age and racial/ethnic differences in the timing and adequacy of prenatal care also may influence reported prevalence rates. All but the most overt cases of gestational diabetes may remain undetected in women who initiate prenatal care in the eighth or ninth month of pregnancy or who receive no care¹.

All references to statistical significance are based on the comparison of independent rates or percents (i.e., they do not include any of the same data or events in their numerator). For example, the rates for American Indian women are compared with the rates for women in all other race categories combined ("all other" category would include White, Black, Asian/Pacific Islander, and Other Race). However, graphs presenting data by race have a category for "all races", which presents data for all race categories combined ("all races" category includes White, Black, American Indian, Asian or Pacific Islander, and Other). The rates shown in graphs for "all races" may not match the rates discussed in the report when comparing rates for one race (i.e., American Indian) with the rates for all other races. Race and ethnicity are reported separately on the birth certificate. Mothers of Hispanic origin are included in appropriate race categories. For methodology used in determining statistical significance see the Technical Notes section on page 17.

Behavioral Risk Factor Surveillance Systems Data:

The Behavioral Risk Factor Surveillance System (BRFSS) is an ongoing surveillance program developed and partially funded by the Centers for Disease Control and Prevention (CDC). It is conducted as a random telephone survey of the non-institutionalized, English speaking adult population. BRFSS estimates are for type 1 or type 2 diabetes only, gestational diabetes is not included.

Definition of Terms:

Diabetes:

A metabolic disease in which the body doesn't produce enough insulin (a hormone made by the pancreas that lets the body turn blood sugar into energy or store it as fat), or can't use the insulin properly. There are three types of diabetes; type 1, type 2, and gestational.

Type 1 Diabetes:

This type of diabetes, formerly called "insulin dependent diabetes", most often appears during childhood or adolescence. Type 1 diabetes accounts for 5 to 10 percent of cases and requires insulin for management.

Type 2 Diabetes:

The most common type of diabetes, this type most often appears after the age of 40 and is linked to obesity, physical inactivity, heredity, and ethnic origin. Type 2 diabetes accounts for 90 to 95 percent of cases and can be managed with oral medication and/or insulin, and changes in diet and physical activity.

Gestational Diabetes:

Gestational diabetes occurs when pregnancy hormones interfere with the body's ability to use insulin resulting in high blood sugar levels. For women, gestational diabetes is a risk factor for the recurrence of gestational diabetes in future pregnancies, as well as future development of type 2 diabetes².

Overweight:

Body Mass Index (BMI) greater than or equal to 25.

Body Mass Index (BMI):

A person's self reported weight in kilograms divided by the square of their self-reported height in meters.

EXECUTIVE SUMMARY

Idaho birth certificate data for all resident live born infants for 1999-2003 were combined to highlight the patterns of diabetes in pregnancy across demographically different populations in Idaho. Maternal characteristics include age at delivery, self-reported race/ethnicity, the month that prenatal care was initiated, the number of prenatal care visits, the method of delivery, and whether diabetes was reported as a medical risk factor for the pregnancy. Maternal diabetes is reported on a checkbox on the birth certificate; however, the type of diabetes (pre-existing or gestational) is not recorded. Birth outcomes data were also analyzed.

Despite a 34.4 percent increase in the rate of diabetes in pregnancy (from 24.4 per 1,000 live births in 1999 to 32.8 in 2003) Idaho's 5-year aggregate rate (27.2 per 1,000 live births from 1999 to 2003) remains significantly lower than the U.S. five-year rate of 29.5 per 1,000 live births from 1998-2002 (the latest data available for the U.S. is 2002). Because the type of diabetes is not specified on the birth certificate, rates include gestational diabetes as well as pre-existing (type 1 and type 2) diabetes.

With a rate of 51.1 live births to women with diabetes per 1,000 live births, Asian/Pacific Islander women had the highest rate of diabetes during pregnancy of all races. American Indian women had the second highest rate of 47.6 per 1,000 live births. Black and White women had much lower rates of diabetes in pregnancy, 28.0 and 26.4 per 1,000 live births, respectively. Hispanic women were more likely to have diabetes during pregnancy than non-Hispanic women (44.6 per 1,000 live births compared with 24.5 per 1,000 live births). Age was also a significant factor in determining the risk for diabetes during pregnancy. Women age 40 years or more had higher rates of diabetes in pregnancy than women aged less than 40 (80.4 per 1,000 live births compared with 26.2 per 1,000 live births).

In Idaho, from 1999-2003, women with diabetes had higher rates of preterm births (18.1 percent) compared with women without diabetes (10.0 percent). Women with diabetes also had higher rates of cesarean delivery (37.3 percent) compared with women without diabetes (18.9 percent). Babies born to women with diabetes during the same time period had higher rates of fetal macrosomia (15.1 percent compared with 8.6 percent), birth injuries (1.0 percent compared with 0.5 percent), and congenital anomalies (3.3 percent compared with 2.2 percent) than babies born to women without diabetes.

Overall, 25.9 percent of Idaho women received less than adequate prenatal care. Even though the rate of intensive prenatal care was significantly higher for women with diabetes than women without diabetes, 20.6 percent of women with diabetes received less than adequate care. Among all women, American Indian women were significantly more likely to receive less than adequate prenatal care than women of all other races. Among women with diabetes, Hispanic women were significantly more likely to receive less than adequate care than non-Hispanic women.

DIABETES PREVALENCE

General Diabetes Prevalence:

According to the American Diabetes Association, there are 17 million people or 6.2 percent of the population in the United States who have diabetes. While an estimated 11.1 million have been diagnosed, there is also an estimated 5.9 million people who are not aware that they have the disease. Each day approximately 2,700 people are diagnosed with diabetes³.

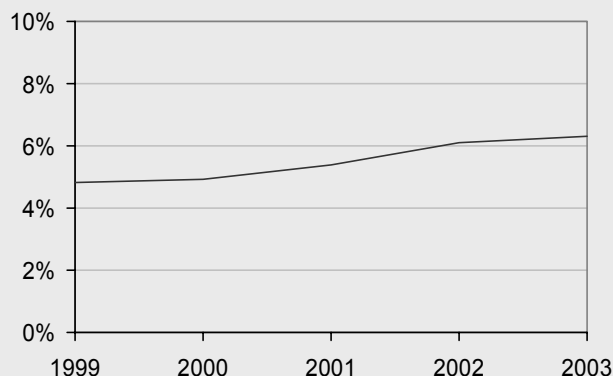
In Idaho the diabetes rate among adults increased 31.3 percent from 4.8 percent in 1999 to 6.3 percent in 2003.

Diabetes Among Women of Childbearing Age:

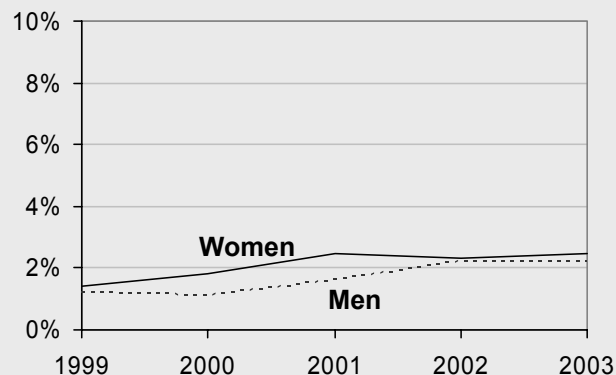
More than half of the people with diabetes in the United States are women⁴. About one in one hundred women of childbearing age has diabetes before pregnancy (pre-existing diabetes) and another three to five percent develop diabetes during pregnancy⁵.

According to the Idaho Behavioral Risk Factor Surveillance System (BRFSS), the prevalence of diabetes among women of childbearing age in Idaho increased 78.6 percent from 1999 to 2003. In 2003, 2.5 percent of women (estimated at over 5,700 women) aged 18-44 had diabetes.

**Diabetes Among Idaho Adults
Aged 18+, BRFSS 1999-2003**



**Diabetes Among Idahoans
Aged 18-44, BRFSS 1999-2003**



Diabetes and Pregnancy:

In the United States from 1998-2002, diabetes occurred in 29.5 per 1,000 live births (2002 is the latest data available for the U.S.). In Idaho from 1999-2003, diabetes was the third most common maternal medical risk factor reported on the birth certificate, behind pregnancy-associated hypertension and previous infant weighing 4,000 or more grams (8 pounds, 13 ounces or more). Diabetes was reported on 2,805 of the birth certificates from 1999-2003, a rate of 27.2 per 1,000 live births.

**Idaho Resident Live Births to Women with Diabetes
Race, Ethnicity, and Age
1999-2003**

		YEAR					
		Total	1999	2000	2001	2002	2003
TOTAL		2,805	484	494	488	626	713
RACE	White	2,598	453	452	457	583	653
	Black	12	2	5	3	2	-
	American Indian	79	16	9	16	9	-
	Asian/Pacific Islander	79	11	14	10	13	31
	Other Race	2	-	1	-	-	1
	Not Stated	35	2	13	2	9	9
ETHNICITY	Hispanic	596	89	89	109	141	158
	Non-Hispanic	2,181	394	391	377	471	548
	Not Stated	28	1	4	2	14	7
AGE	40 +	146	26	21	30	31	38
	Under 40	2,659	458	473	458	595	675
	Not Stated	-	-	-	-	-	-

Diabetes in pregnancy is increasing at a faster rate in Idaho than in the United States. From 1999-2003, Idaho's rate increased 34.4 percent, from 24.4 in 1999 to 32.8 in 2003. In comparison, the U.S. rate increased 22.8 percent, from 26.7 in 1998 to 32.8 in 2002.

HIGH RISK POPULATIONS

Increasing numbers of women, especially non-white women, are at risk of having pregnancies complicated by diabetes⁶. The prevalence of diabetes in pregnancy is not uniform throughout the United States. Various racial and ethnic groups differ in their susceptibility to this condition. Factors such as older age, obesity, and family history of diabetes also increase the risk⁷.

Not all maternal risk factors can be analyzed with birth certificate data. For example, data on maternal weight before pregnancy or diabetes in a previous pregnancy were not collected on the Idaho Certificate of Live Birth analyzed for this report. Beginning in January of 2004 Idaho adopted a revised certificate that will provide additional data (see technical notes). This report will concentrate on populations with high rates of diabetes in pregnancy.

Race:

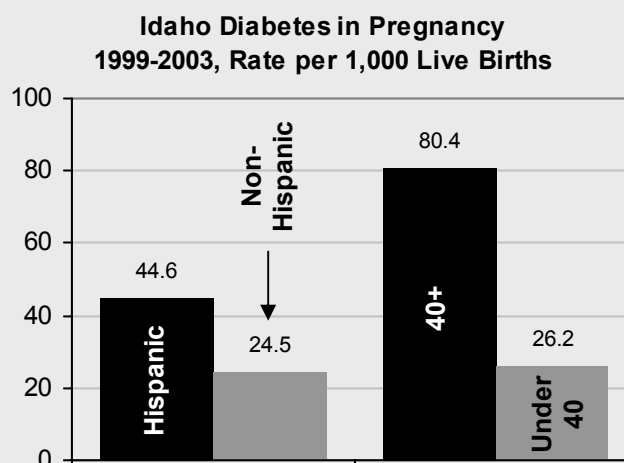
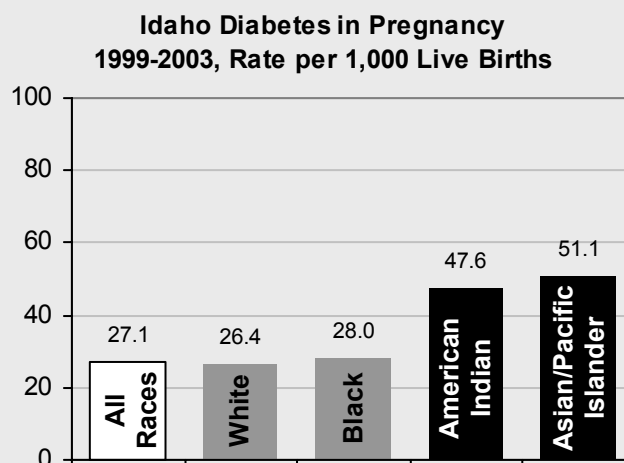
From 1999-2003, Asian/Pacific Islander and American Indian women had significantly higher rates of diabetes in pregnancy when compared with all other races. Asian/Pacific Islander women had Idaho's highest rate of diabetes in pregnancy at 51.1 per 1,000. American Indian women were second with 47.6 live births to women with diabetes per 1,000 live births to women with known maternal medical risk factors.

Ethnicity:

Hispanic women in Idaho had a significantly higher risk of diabetes in pregnancy than non-Hispanic women (44.6 compared with 24.5 per 1,000 live births, respectively).

Age:

Women aged 40 years or more had a diabetes in pregnancy rate more than three times that of women aged less than 40 years (80.4 compared with 26.2 per 1,000 live births).



BIRTH OUTCOMES

Diabetes during pregnancy, whether pre-existing or gestational, increases the risk for maternal complications during pregnancy. Infants born to women with diabetes are also at increased risk for adverse outcomes, including high birth weight and congenital anomalies.

Babies born to women with diabetes are at high risk for mortality, prematurity, congenital defects, macrosomia, neonatal hypoglycemia, respiratory distress syndrome, and hyper-bilirubinemia, particularly when maternal glucose levels are not tightly controlled during pregnancy. Many complications develop during the second or third trimester, when levels of insulin-antagonist hormones increase and insulin resistance usually occurs⁸.

Diabetes also increases the risk of maternal complications such as ketoacidosis (diabetic ketoacidosis is a complication of diabetes mellitus caused by the buildup of by-products of fat metabolism (ketones), which occurs when glucose is not available as a fuel source for the body); exacerbated microvascular, renal, ocular, and neural complications; urinary-tract infections; toxemia; and hydramnios. These complications put a woman at risk for preterm and/or cesarean delivery⁹.

Diabetes and Fetal Macrosomia:

Women with poorly controlled gestational or pre-existing diabetes are at increased risk of having a high or very high birth weight baby. Extra sugar in the mother's blood crosses the placenta and goes to the fetus. The fetus then produces extra insulin, which helps it process the sugar and store it as fat.

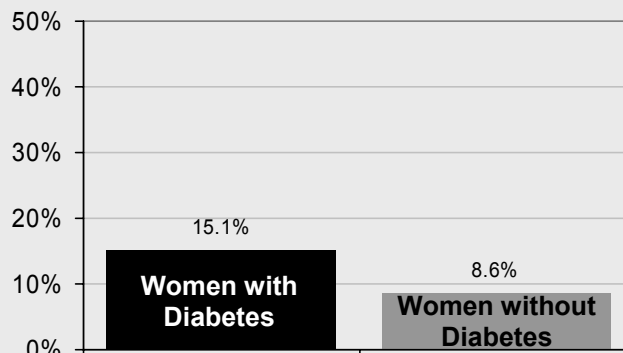
Fetal macrosomia is a term for a larger than average baby, with a birth weight of 4,000 grams or more. Idaho women with diabetes had a 75.6 percent higher rate of fetal macrosomia than women without diabetes (15.1 percent compared with 8.6 percent), a difference that is statistically significant.

Among women with diabetes, some groups were even more likely to have a macrosomic baby. American Indian women were 81.0 percent more likely than women of all other races to have a macrosomic baby (26.6 percent compared with 14.7 percent).

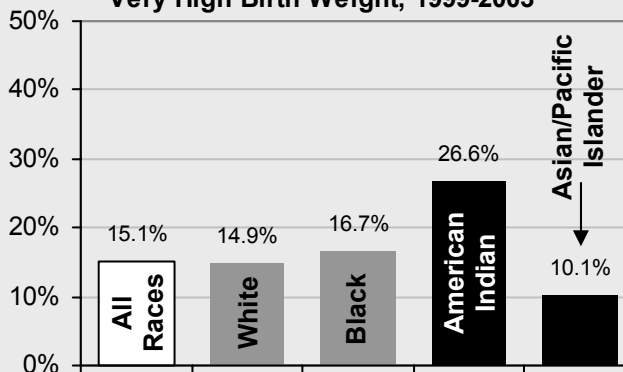
Hispanic women with diabetes had a 23.1 percent higher chance of having a high birth weight baby than non-Hispanic women with diabetes (17.6 percent compared with 14.3 percent).

The risk of fetal macrosomia was 14.0 percent higher for women aged 40 years or more with diabetes, compared with women under the age of 40 with diabetes (17.1 percent compared with 15.0 percent).

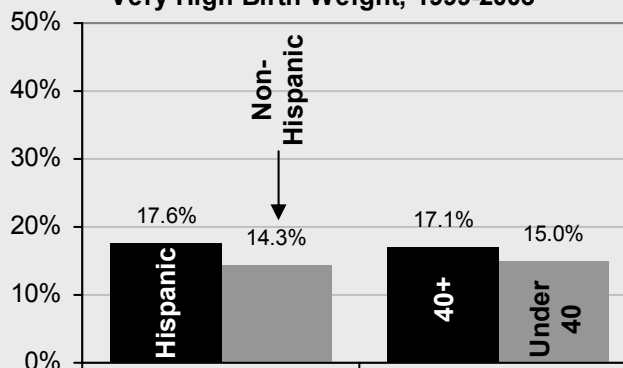
**Idaho Resident Live Births
Percent High or Very High Birth Weight
1999-2003**



**Idaho Resident Live Births to
Women with Diabetes, Percent High or
Very High Birth Weight, 1999-2003**



**Idaho Resident Live Births to
Women with Diabetes, Percent High or
Very High Birth Weight, 1999-2003**



Diabetes and Preterm Delivery:

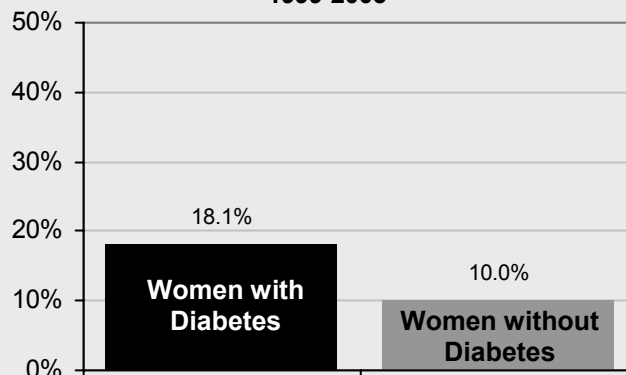
Women with poorly controlled diabetes, especially pre-existing diabetes, are at increased risk of certain pregnancy complications. These include; pregnancy-related high blood pressure (pre-eclampsia), polyhydramnios (an excess of amniotic fluid, which can contribute to preterm labor), preterm delivery, and stillbirth¹⁰.

In Idaho, women with diabetes had a significantly higher rate of preterm delivery (18.1 percent) than women without diabetes (10.0 percent).

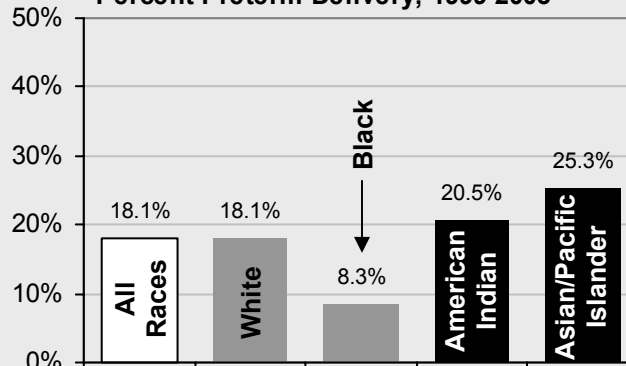
Asian/Pacific Islander women with diabetes were 39.8 percent more likely to give birth preterm than women of all other races (25.3 percent of Asian/Pacific Islander women with diabetes compared with 18.1 percent of women of all other races with diabetes). The preterm delivery rate among American Indian women with diabetes (20.5 percent) was 12.6 percent higher than the rate for women of all other races who had diabetes (18.2 percent).

While ethnicity did not have a significant impact on the risk of preterm delivery for women with diabetes, being 40 years old or more did significantly increase the chance of preterm delivery for women with diabetes. Women aged 40 years or more who had diabetes (27.4 percent) were 55.7 percent more likely to have a preterm delivery than women under the age of 40 who had diabetes (17.6 percent).

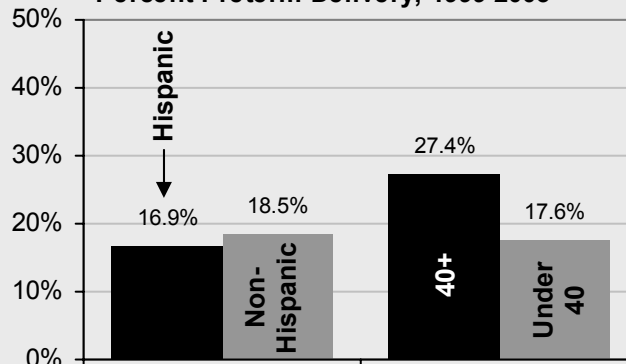
**Idaho Resident Live Births
Percent Preterm Delivery
1999-2003**



**Idaho Resident Live Births to
Women with Diabetes
Percent Preterm Delivery, 1999-2003**



**Idaho Resident Live Births to
Women with Diabetes
Percent Preterm Delivery, 1999-2003**



Diabetes and Cesarean Delivery:

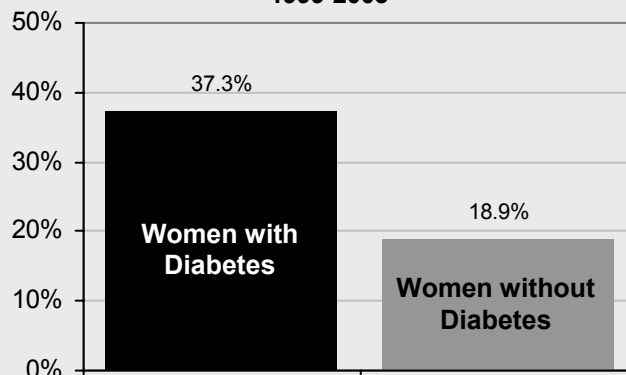
In babies with macrosomia, fat tends to accumulate around the shoulders and trunk, sometimes making these babies difficult to deliver vaginally and putting them at risk for injuries during delivery¹¹.

Diabetes nearly doubled a woman's risk of cesarean delivery. In Idaho, women with diabetes were significantly more likely to have a cesarean delivery (37.3 percent) when compared with women without diabetes (18.9 percent).

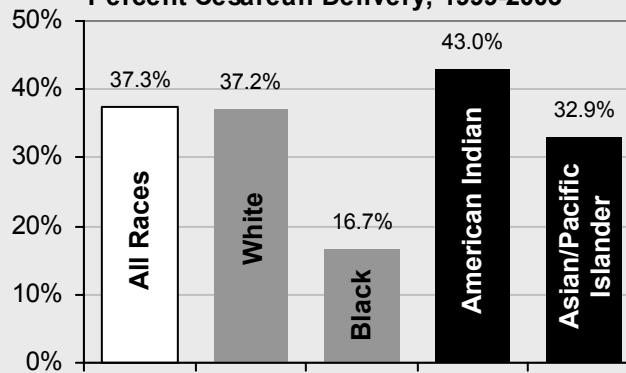
Among women with diabetes, American Indian women were 16.2 percent more likely to have a cesarean delivery than women of all other races (43.0 percent of American Indian women with diabetes compared with 37.0 percent of all other women with diabetes).

Age was also an important factor in determining a woman's risk for cesarean delivery. Among women with diabetes, women aged 40 years or more had a 26.6 percent higher chance of having a cesarean delivery than women under 40 years of age (46.6 percent of women aged 40 years or more compared with 36.8 percent of women under the age of 40).

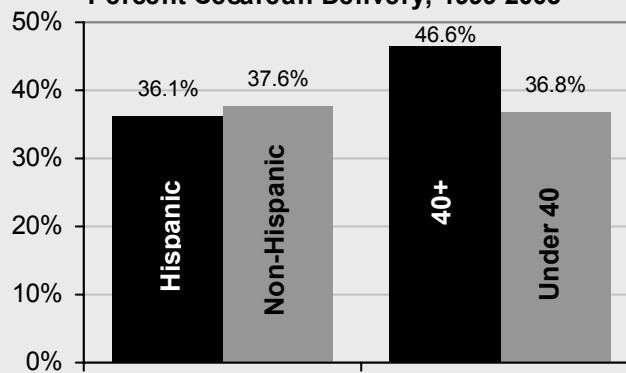
**Idaho Resident Live Births
Percent Cesarean Delivery
1999-2003**



**Idaho Resident Live Births to
Women with Diabetes
Percent Cesarean Delivery, 1999-2003**



**Idaho Resident Live Births to
Women with Diabetes
Percent Cesarean Delivery, 1999-2003**



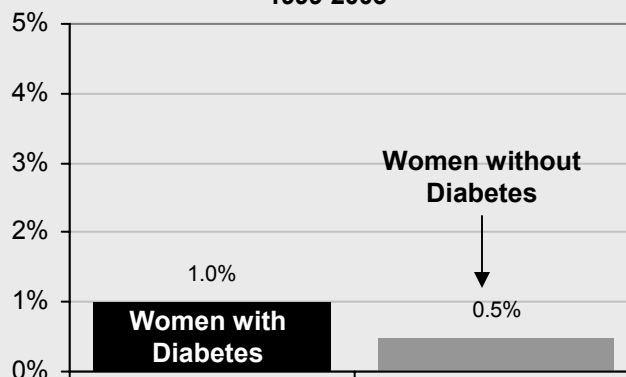
Diabetes and Birth Injury:

While birth injuries are not common with the current technology and birthing practices, some babies are at a higher risk.

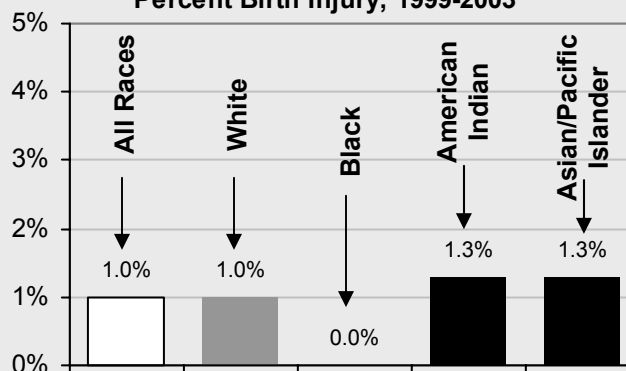
Babies born to women with diabetes had a significantly higher risk of birth injury than babies born to women without diabetes (1.0 percent compared with 0.5 percent).

Among women with diabetes, babies born to Hispanic women (1.5 percent) had a higher rate of birth injuries than babies born to non-Hispanic women (0.9 percent).

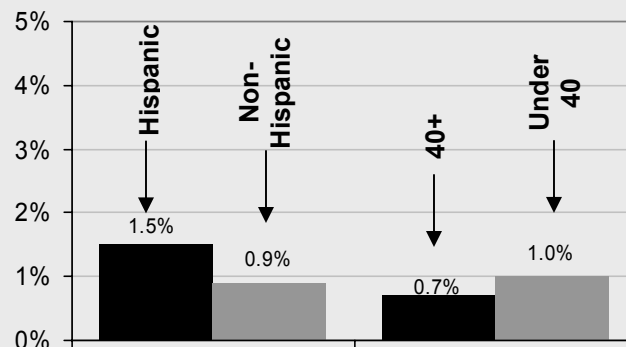
**Idaho Resident Live Births
Percent Birth Injury
1999-2003**



**Idaho Resident Live Births to
Women with Diabetes
Percent Birth Injury, 1999-2003**



**Idaho Resident Live Births to
Women with Diabetes
Percent Birth Injury, 1999-2003**



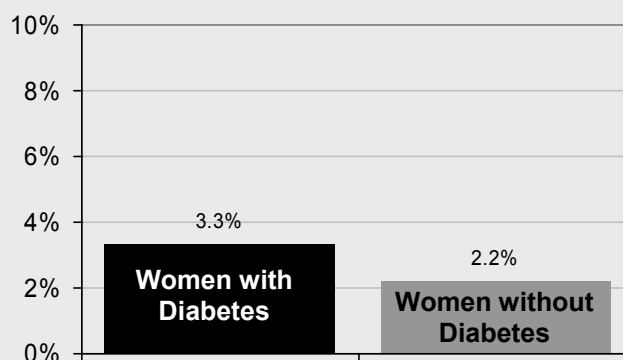
Diabetes and Congenital Anomalies:

Women with poorly controlled pre-existing diabetes in the early weeks of pregnancy are more likely than women without diabetes to have a baby with a serious birth defect. Women with gestational diabetes, which generally develops later in pregnancy, usually do not have an increased risk of having a baby with a birth defect. However, when gestational diabetes is severe enough to require insulin treatment, the risk of birth defects increases¹².

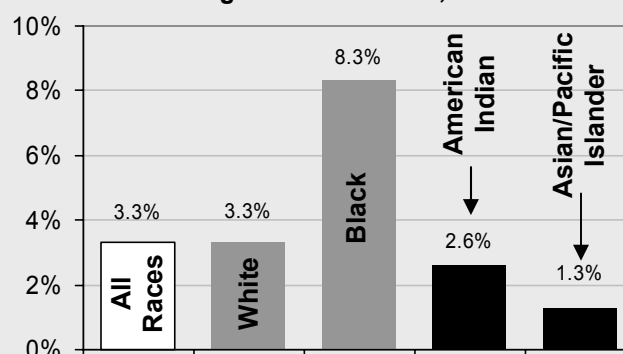
The rate of birth defects or congenital anomalies for babies born to women with diabetes was significantly higher than the rate of defects for babies born to women without diabetes, 3.3 percent compared with 2.2 percent.

Among women with diabetes, age is a significant factor in determining the risk for congenital anomalies. The rate of birth defects was 164.5 percent higher for women aged 40 and over than for women under 40 (8.2 percent compared with 3.1 percent).

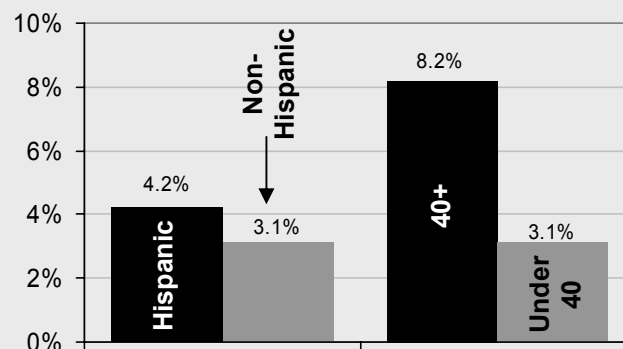
**Idaho Resident Live Births
Percent Congenital Anomalies
1999-2003**



**Idaho Resident Live Births to
Women with Diabetes
Percent Congenital Anomalies, 1999-2003**



**Idaho Resident Live Births to
Women with Diabetes
Percent Congenital Anomalies, 1999-2003**



PRENATAL CARE

Type 1 or Type 2 Diabetes:

“Major congenital malformations remain the leading cause of mortality and serious morbidity in infants of mothers with type 1 or type 2 diabetes. During the first six weeks of pregnancy, the baby’s organs are forming. Blood sugar levels during these early weeks affect the baby’s growing organs. High blood sugar levels can lead to birth defects and spontaneous abortion (miscarriage).¹³

For women with type 1 or type 2 diabetes, pre-pregnancy counseling is recommended in order to have strict control over blood sugar before conception. Preconception care should involve a multidisciplinary team that includes a diabetologist, internist, or family practice physician skilled in diabetes management; and obstetrician familiar with the management of high-risk pregnancies; diabetes educators, including a nurse, dietitian, and social worker; and other specialists, as deemed necessary.¹⁴

The American Diabetes Association recommends an interactive preconception and early pregnancy care plan that includes the four main elements listed below. All four elements are important for patients to achieve the level of sustained glycemic control necessary to minimize the risk of miscarriage and congenital malformations.¹⁵

- Patient education about the interaction of diabetes, pregnancy, and family planning
- Education in diabetes self-management skills
- Physician-directed medical care and laboratory testing
- Counseling by a mental health professional when indicated to reduce stress and improve adherence to the diabetes treatment plan

With proper medical supervision, women with diabetes are almost as likely as women without diabetes to have an uncomplicated pregnancy and a healthy baby, as long as blood sugar levels are well controlled before pregnancy¹⁶.

Gestational Diabetes:

“In its new evidence-based recommendations on gestational diabetes mellitus (GDM), the American College of Obstetricians and Gynecologists (ACOG) advises that it is appropriate to screen all pregnant women for GDM, whether by patient history, clinical risk factors for GDM, or a laboratory test to determine blood glucose levels.¹⁷”

According to the American Diabetes Association, risk assessment for GDM should be undertaken at the first prenatal visit. Women with clinical characteristics consistent with a high risk for GDM (those with marked obesity, personal history of GDM, glycosuria, or a strong family history of diabetes) should undergo glucose testing as soon as possible. High-risk women not found to have GDM at the initial testing should be tested again between 24 and 28 weeks of gestation¹⁸.

Women who are assigned a low risk status based on their initial screening require no glucose testing, but this category is limited to those women meeting all of the following characteristics:

- Aged <25 years
- Weight normal before pregnancy
- Member of an ethnic group with a low prevalence of GDM
- No known diabetes in first-degree relatives
- No history of abnormal glucose tolerance
- No history of poor obstetric outcome

Women who are not in a high risk group for diabetes in pregnancy, but do not meet all of the requirements to be designated low risk should be tested between 24 and 28 weeks of gestation¹⁹.

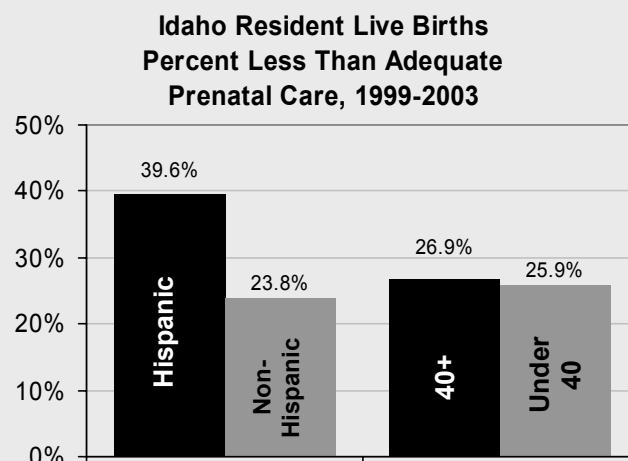
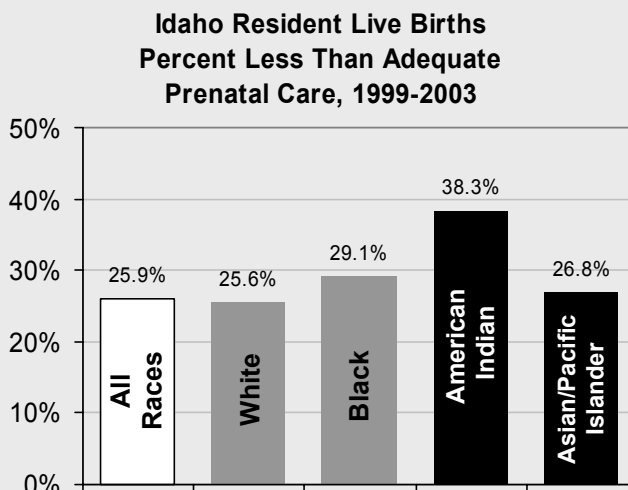
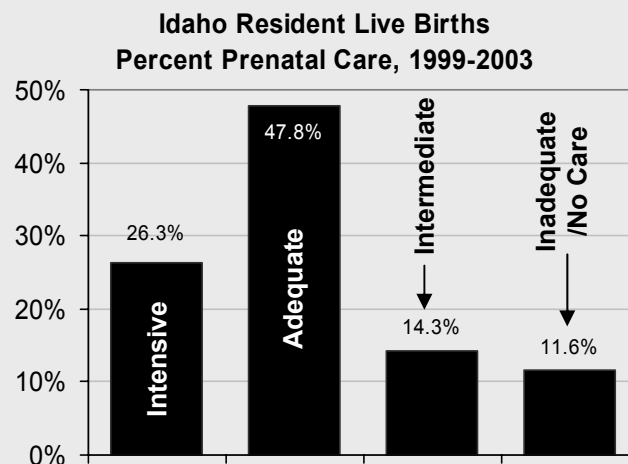
Prenatal Care Utilization:

According to the March of Dimes, all women need prenatal care. Women who see a health care provider regularly during pregnancy have healthier babies, are less likely to deliver prematurely, and are less likely to have other serious problems related to pregnancy. Furthermore, prenatal care plays an essential role in the screening, diagnosis, and treatment of diabetes. Type 2 diabetes accounts for about 90 percent of diabetes cases in adult women and some women may become aware for the first time during routine prenatal care and screening procedures that they have asymptomatic type 2 diabetes.²⁰

One measure of prenatal care is the Adequacy of Prenatal Care Utilization (APNCU) Index. The APNCU index is based on full recommendations of the American College of Obstetricians and Gynecologists (ACOG). The index classifies care as intensive, adequate, intermediate, inadequate, or no care. (See Technical Notes)

Overall, 25.9 percent of Idaho women received less than adequate prenatal care; however, the rates of less than adequate care were significantly higher for some racial and ethnic groups with a high risk of diabetes during pregnancy.

American Indian women were significantly more likely to receive less than adequate prenatal care (38.3 percent) than women of all other races (25.7 percent) and Hispanic women were significantly more likely to receive less than adequate prenatal care (39.6 percent) than non-Hispanic women (23.8 percent).

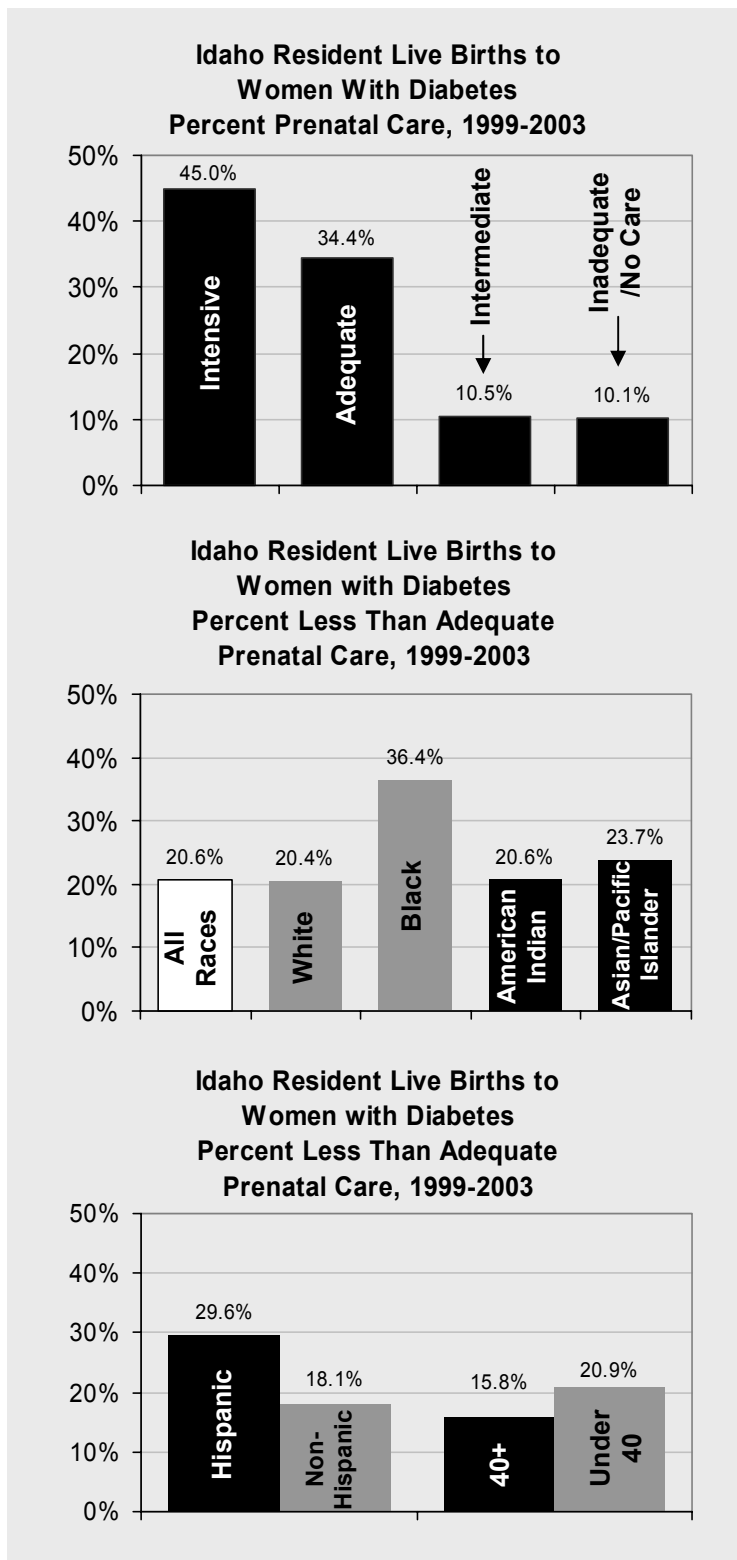


Prenatal Care Utilization in Women with Diabetes:

Better control of maternal hyperglycemia has made an enormous difference in improving birth outcomes for women with diabetes. The obstetrician, diabetologist, and nurse educator all have important roles in providing advice and treatment to women with diabetes before and throughout pregnancy.²¹

While women with diabetes had significantly higher rates of intensive prenatal care than women without diabetes, 20.6 percent of women with diabetes received less than adequate prenatal care.

Ethnicity was an important factor in prenatal care rates. Hispanic women with diabetes were significantly more likely to receive less than adequate prenatal care than non-Hispanic women. From 1999-2003, 29.6 percent of Hispanic women with diabetes received less than adequate prenatal care, compared with 18.1 percent of non-Hispanic women with diabetes.

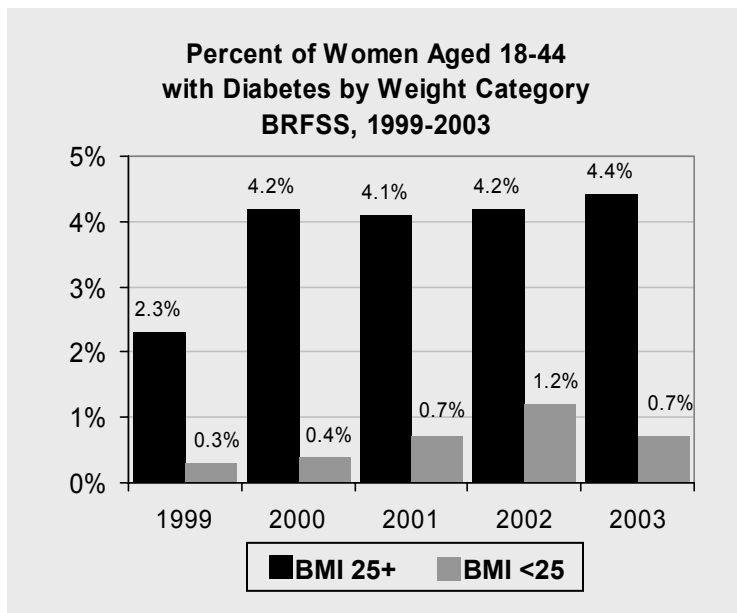


RELEVANT TRENDS

Overweight Population:

The upward trend in diabetes rates for women of childbearing age is likely to continue as the prevalence of obesity in the same population group increases. Type 2 diabetes is linked to obesity and physical inactivity.

Overall, in 2003, 41.6 percent of women aged 18-44 were overweight in Idaho, an increase of 12.1 percent from 37.1 percent in 1999. In 2003, 2.5 percent of women aged 18-44 had diabetes; 4.4 percent of overweight Idaho women aged 18-44 had diabetes, compared with 0.7 percent of women who were not overweight.



TECHNICAL NOTES

Adequacy of Prenatal Care Utilization (APNCU) Index:

The classification of the adequacy of prenatal care is based on the onset of prenatal care, the number of prenatal visits, and the length of gestation. The APNCU Index is based on full recommendations set forth by the American College of Obstetrics and Gynecologists (ACOG). This index classifies care as intensive, adequate, intermediate, inadequate, or no care by comparing the number of prenatal care visits to the number of visits that a woman was expected to receive, given the month of pregnancy prenatal care began and the length of gestation.

Adequacy of Prenatal Care Utilization (APNCU) Index:

Index Level	Definition
Intensive Care	Prenatal care begun by the 4 th month of pregnancy and 110% or more of the recommended visits*.
Adequate Care	Prenatal care begun by the 4 th month of pregnancy and 80% - 109% of the recommended visits*.
Intermediate Care	Prenatal care begun by the 4 th month of pregnancy and 50% - 79% of the recommended visits*.
Inadequate or No Care	Prenatal care begun after the 4 th month of pregnancy or less than 50% of the recommended visits*.
* Based on American College of Obstetricians and Gynecologists (ACOG) guidelines of 13 visits for a 40 week gestation pregnancy.	

Statistical Significance:

All references to statistical significance are based on the comparison of independent rates or percents (i.e., they do not include any of the same data or events in their numerator). For example, the rates for American Indian women are compared with the rates for women in all other race categories combined ("all other" category would include White, Black, Asian/Pacific Islander, and Other Race). However, graphs presenting data by race have a category for "all races", which presents data for all race categories combined ("all races" category includes White, Black, American Indian, Asian or Pacific Islander, and Other). The rates shown in graphs for "all races" may not match the rates discussed in the report when comparing rates for one race (i.e., American Indian) with the rates for all other races. Race and ethnicity are reported separately on the birth certificate. Mothers of Hispanic origin are included in appropriate race categories.

The statistical significance of differences in probability estimates between independent subgroups is assessed in this report by comparing the boundaries of 95-percent confidence intervals constructed around each estimate. The formula for confidence interval calculation is as follows: Confidence Interval = Prevalence Estimate +/- (1.96*Standard Error). If there is any overlap between the two confidence intervals, the difference is not statistically significant, and if there is no overlap between the two confidence intervals, the difference between the two estimates is statistically significant at the $p < 0.05$ level. There are other methods of assessing statistical significance, but the examination of the overlap between confidence intervals is a more conservative procedure less likely to falsely detect a significant difference where there is no true difference.

Women with Diabetes:

Maternal diabetes is reported from the hospital or physician record on a check box on the birth certificate.

The 1989-2003 Idaho Certificate of Live Birth does not distinguish between pre-existing (type 1 or type 2 diabetes existing before pregnancy) and gestational diabetes (onset of insulin dependent or non-insulin dependent diabetes during pregnancy). Any mother with a mark in the box 04 ("Diabetes") under section 39a ("MATERNAL RISK FACTORS FOR THIS PREGNANCY") of the birth certificate was included in the count of women with diabetes.

Starting in January of 2004, Idaho began using a revised birth certificate. The 2004 certificate will distinguish between gestational and pre-existing diabetes.

State of Idaho Certificate of Live Birth (Used from 1989-2003)

39a. MEDICAL RISK FACTORS FOR THIS PREGNANCY (Check all that apply)

- Anemia..... 01 ☐
- Cardiac disease..... 02 ☐
- Acute or chronic lung disease..... 03 ☐
- Diabetes..... 04 ☐
- Genital herpes..... 05 ☐
- Hydramnios/Oligohydramnios..... 06 ☐
- Hemoglobinopathy..... 07 ☐
- Hypertension, chronic..... 08 ☐
- Hypertension, pregnancy-associated..... 09 ☐
- Eclampsia..... 10 ☐
- Incompetent cervix..... 11 ☐
- Previous infant 4000+ grams..... 12 ☐
- Previous preterm or small-for-gestational-age Infant..... 13 ☐
- Renal disease..... 14 ☐
- Rh sensitization..... 15 ☐
- Uterine bleeding..... 16 ☐
- NONE..... 00 ☐
- Other..... 17 ☐

(Specify)

State of Idaho Certificate of Live Birth (Used beginning in 2004)

40. RISK FACTORS IN THIS PREGNANCY (Check all that apply)

- Diabetes:
 - 01 ☐ Prepregnancy (diagnosis prior to this pregnancy)
 - 02 ☐ Gestational (diagnosis in this pregnancy)
- Hypertension:
 - 03 ☐ Prepregnancy (chronic)
 - 04 ☐ Gestational (PIH, preeclampsia, eclampsia)
- 05 ☐ Previous preterm birth
- 06 ☐ Other previous poor pregnancy outcome (includes perinatal death, small-for-gestational-age/intrauterine growth restricted birth)
- 07 ☐ Vaginal bleeding during this pregnancy prior to the onset of labor
- 08 ☐ Pregnancy resulted from infertility treatment
- 09 ☐ Mother had a previous cesarean delivery
 - If yes, how many? _____
- 00 ☐ None of the above

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